ORDER NO. KM49011423A3

Service Manual

and Technical Guide

AUTO-LOGIC
EASA-PHONE
Integrated Telephone
Answering Machine

Telephone Equipment

KX-T2470B

Please use this Service manual together with the service manual for model No.KX-T2470 order No. KM49006227C1.
This Service Manual indicates the main differences between; Original KX-T2470 and KX-T2470B.

■ PARTS COMPARISON TABLE

Ref. No.	Part No.		Part Name & Description	Pcs/Set	Remarks
	KX-T2470	KX-T2470B			
MECHANICAL PARTS					
M1	PQJH1E6Z	PQJH1E8Z	R/P Head	2	
M2	PQJH6E4Z	PQJH6E7Z	Erase Head	2	
M7	PQFD9914Z	PQFD9914Y	Operation Plate	1	
M21	PQFZ9910Z	PQFZ9918Z	Flexiable P.C. Board Assembly	1	
M32	PQFS117Z	PQFS117Y	Spring	1	
M43	PQUP717Z	PQUP963Z	P.C.Board, OGM	1	
M46	PQUP568Z	PQUP962Z	P.C.Board, ICM	1	
M50	——	PQHR322Z	Isulator	2	Addition
ICS, AND TRANSISTORS					
IC2	PQVI4678A06H	PQVI4678A07H	IC	1	
IC3	PQVIT8802B24	PQVIT8802B25	IC	1	
IC4	AN6181K	AN6181NK	IC	1	
Q221, 222	——	2SD1819A	Transistor(Si)	2	Addition
CABINET PARTS					
K1	PQKM187Y8	PQYMT2470BX	Upper Cabinet Assembly	1	
K2	PQYF1047W7	PQYFT2470BX	Lower Cabinet Assembly	1	
K17	PQHP5052Y	PQHP5052X	Telephone Card (Large)	1	
ELECTRICAL PART					
E14	PQWPT2470M	PQWPT2470BX	Printed Circuit Board Assembly (NLA)	1	
ACCESSORIES					
A1	KX-A11-W	KX-A11BMX	AC Adaptor	1	
A2	PQJA59Y	PQJA59V	Telephone Cord	1	
A3	PQJA30M	PQJA212M	Handset Cord	1	
A6	PQQX6194Z	PQQX6408Z	Instruction Book	1	
PACKING MATERIALS					
P1	PQPK1118Z	PQPK1359Z	Gift Box	1	
RESISTORS					
R14	ERDS1TJ470	ERDFS1TJ470	Resistor, 47Ω	1	
R158	ERDS2TJ03	PQ4R10XJ103	Resistor, 10KΩ	1	
R176	PQ4R18XJ334	PQ4R10XJ334	Resistor, 330KΩ	1	
R196	PQ4R10XJ152	-------	Resistor, 1.5KΩ	0	Deletion
R197	PQ4R10XJ152	-------	Resistor, 1.5KΩ	0	Deletion
R221	——	PQ4R10XJ473	Resistor, 47KΩ	1	Addition
R222	——	PQ4R10XJ103	Resistor, 10KΩ	1	Addition
R223	——	PQ4R10XJ473	Resistor, 47KΩ	1	Addition
R224	——	PQ4R10XJ103	Resistor, 10KΩ	1	Addition
R901	——	ERDFS1TJ474	Resistor, 470KΩ	1	Addition
CAPACITORS					
C9	ECFD1E223KD	PQCBC0J223MY	Capacitor, 0.022μF	1	
C10	ECEA0JU471	ECEA1AU221	Capacitor, 220μF	1	
C26	ECEA0JU102	ECEA0JU331	Capacitor, 330μF	1	
C174	ECFD1C333KD	ECUV1H333JC	Capacitor, 0.033μF	1	
C178	ECFD1C104KD	ECUV1H104MD	Capacitor, 0.1μF	1	
C901	——	ECKTAE103ZF	Capacitor, 0.01μF	1	Addition

Panasonic

Matsushita Electric Industrial Co.,Ltd
P.O.Box 288, Central Osaka Japan

ORDER NO. KM49006227C1
F1

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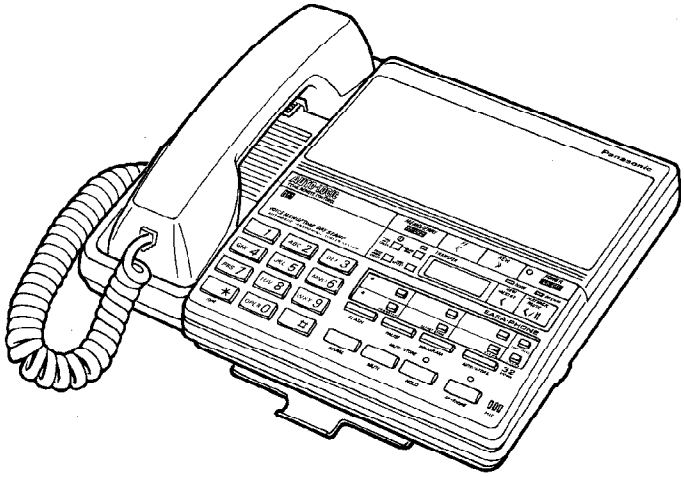
and Technical Guide

AUTO-LOGIC™
EASA-PHONE®
Integrated Telephone
Answering System

Telephone Equipment

KX-T2470



SPECIFICATIONS\ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ

CPU DATA\ИНФОРМАЦИЯ О ПРОЦЕССОРЕ

BLOCK DIAGRAM\БЛОК - СХЕМА

MEASUREMENT AND ADJUSTMENT METHOD\ИЗМЕРЕНИЯ И РЕГУЛИРОВКИ

TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES\ЦОКОЛЕВКА ИНТЕГРАЛЬНЫХ СХЕМ, ТРАНЗИСТОРОВ И ДИОДОВ

EXTENSION CORD CONNECTING METHOD\ПОДСОЕДИНЕНИЕ СЕРВИСНЫХ КАБЕЛЕЙ

SCHEMATIC DIAGRAM\ПРИНЦИПИАЛЬНАЯ СХЕМА

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ACCESSORIES AND PACKING MATERIALS\ПРИНАДЛЕЖНОСТИ И УПАКОВОЧНЫЕ МАТЕРИАЛЫ

MECHANICAL PARTS LOCATION\РАСПОЛОЖЕНИЕ МЕХАНИЧЕСКИХ ЧАСТЕЙ

CABINET AND ELECTRICAL PARTS LOCATION\РАСПОЛОЖЕНИЕ ЧАСТЕЙ КОРПУСА И ЭЛЕКТРИЧЕСКИХ ЧАСТЕЙ

REPLACEMENT PARTS LIST\СПИСОК ЗАПАСНЫХ ЧАСТЕЙ

Panasonic

Matsushita Services Company
Division of Matsushita Electric
Corporation of America
50 Meadowland Parkway,
Secaucus, New Jersey 07094

Matsushita Electric
of Canada Limited
5770 Ambler Drive, Mississauga,
Ontario, L4W 2T3

Panasonic Sales Company,
Division of Matsushita Electric
of Puerto Rico, Inc.
San Gabriel Industrial Park
65th Infantry Ave. Km.9.5
Carolina, Puerto Rico 00630

SPECIFICATIONS

General:

Power Source:	AC; AC adaptor KX-A11-W (DC 12 V)
Power Output:	350 mW (max.)
Speaker:	Unit; 5 cm ($1^{31}/_{32}$") PM dynamic Handset; 2.6 cm ($1^{3}/_{16}$") PM magnetic type
Microphone:	Condenser microphone
Jacks:	Telephone line, DC IN
Dimensions:	$9^{19}/_{32}$"×$8^{7}/_{8}$"×$3^{15}/_{16}$" [244 (W)×225 (D)×100 (H)] mm (with handset)
Weight:	0.94 kg (2 lb 1.16 oz) without cassette tapes

Telephone Section:

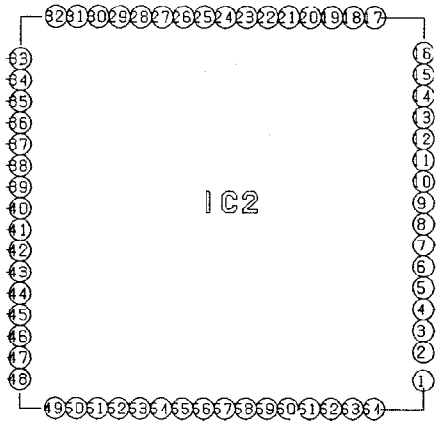
Memory Capacity:	26 telephone numbers, up to 16 digits for each station
Dial Speed:	Tone (DTMF)/Pulse (10 pps)
Redial:	Last dialed telephone number up to 15 times in 10 minute period
Pause:	Two automatic dial tone detectors

Tape Deck Section:

Outgoing Message (OGM):	Recorded on a microchip. Recording Time is 30 seconds.
Incoming Message (ICM):	Micro Cassette (MC-30) (1 MIN/VOX/A0)
Tape Speed:	2.4 cm/s
Wow and Flutter:	0.58% (WRMS)
Motor:	Electrical governor motor

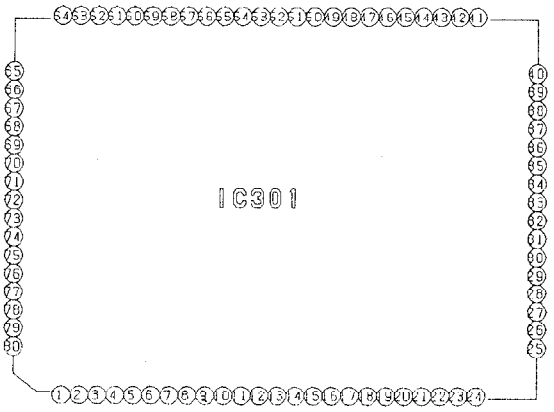
Design and specifications are subject to change without notice.

CPU DATA



Par No.: PQVI4678A06H
Power Supply: 4.5V~5.5V
Program ROM: 8K X 10 bit
Inside Data RAM: 512 x 4 bit

Pin No.	Function	High	Low	Pin No.	Function	High	Low
1	Strobe-Data		Active	33	AC Down		AC Down
2	Strobe-Data			34	BELL		Bell
3	Strobe-Data			35	CPC	CPC	
4	Strobe-Data			36	PL-C	ON	
5	Key Input		Press	37	M-SPEED	High	Low
6	Key Input			38	PL-B		
7	Key Input			39	PL-A	ON	
8	Key Input			40	MOTOR		
9	ITS SCK			41	ERASE	Active	
10	ITS SO			42	RVN(OGM)		
11	ITS SI			43	RVN(ICM)		
12	ITS Busy		Busy	44	Position SW	Newtral	Active
13	C0			45	Vox	No Voice	Vox
14	C1			46	Vcc		
15	C2			47	SP OUT	Active	
16	C3			48	SP MUTE	Mute	Out
17	NC			49	ICM/OGM		
18	NC			50	PLAY/REC		
19	Beep-L			51	MIC	Active	
20	Beep-S			52	L IN		
21	Reset	RESET		53	REC		
22	GND		GND	54	L OUT		
23	OSC1			55	A Vcc	Analog VCC	
24	OSC2			56	A in (-)		
25	TEST	Normal		57	A in (+)		
26	IN USE		ON	58	GC		
27	Answer			59	V ref		
28	Power			60	A Gnd		Analog GND
29	Transfer			61	VG Start	Start	
30	TR	ON		62	C5		
31	ITS TEST		TEST	63	VG Busy	Busy	
32	TAM TEST		TEST	64	C4		



Par No.: PQVI4608A61F
Power Supply: 2.7V~6.0V
Program ROM: 8K
Inside Data RAM: 1.184 x 4 bit

Pin No.	Function	High	Low	Pin No.	Function	High	Low
1	Power Down	Power On	Power Down	31	Hook SW	ON-Hook	OFF-Hook
2	DP	Break	Make (H-imp)	32	EX-Hook	OFF-Hook	ON-Hook
3	Strobe			33~54	Not Used		
4	Strobe			55	SEG 23		
5	Strobe			56	SEG 24		
6	Strobe	Usual	Active	57	SEG 25		
7	Strobe			58	SEG 26		
8	Strobe			59	SEG 27		
9	Option Input			60	SEG 28		
10	Option Input			61	SEG 29		
11	Tone Input	Disable	Enable	62	SEG 30		
12	Stop Input	Stop	Usual	63	SEG 31		
13	Test	Usual		64	SEG 32		
14	X1			65	COM 1		
15	X2			66	COM 2		
16	GND		0V	67	COM 3		
17	Serial Clock	Usual	Active	68	COM 4		
18	Serial Input			69	V 1		
19	Serial Output			70	V 2		
20	Serial Busy			71	V 3		
21	Key-Input			72	Tonec		Usual
22	Key-Input	Usual	Active	73	Toner		Usual
23	Key-Input			74	V ref		
24	Key-Input			75	Vcc	5 V	
25	TR	Hold	Release	76	System Clock		
26	SP/HS	SP-Phone	Handset	77	System Clock		
27	Mic Mute	ON	OFF	78	Reset	Reset	Usual
28	SP Mute	ON	OFF	79	Mute LED	OFF	ON
29	Not Used			80	ON/OFF LED	OFF	ON

BLOCK DIAGRAM

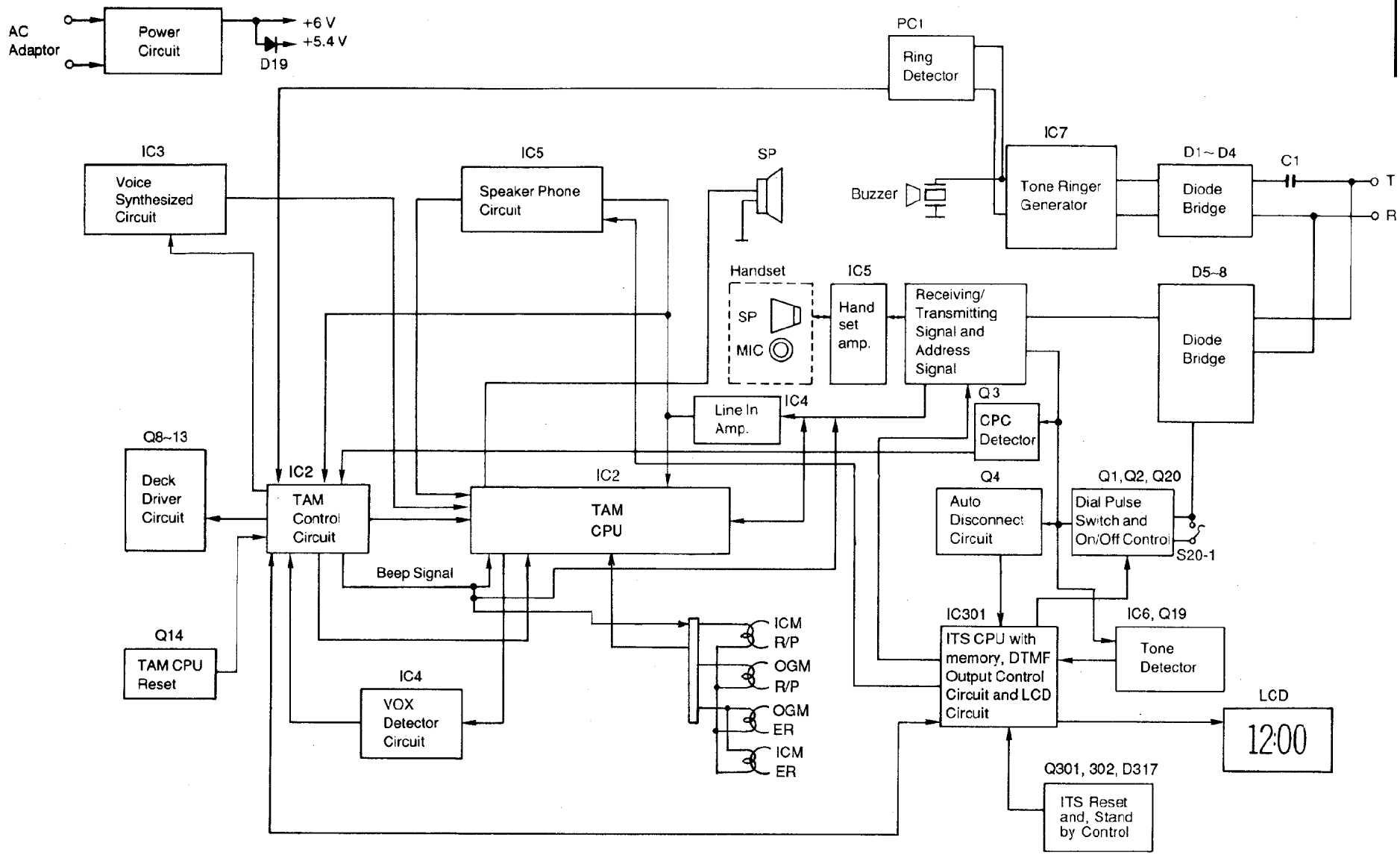
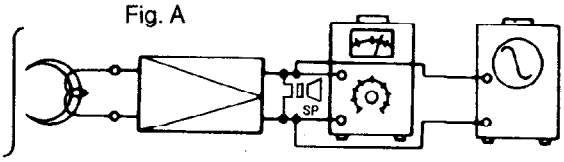
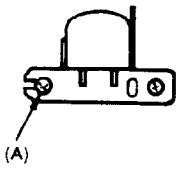


Fig. 9

MEASUREMENT AND ADJUSTMENT METHOD

Notes: 1. Make sure the heads are clean.
2. Make sure the capstan and pressure roller are clean.
3. Room temperature for measuring and adjusting: 20±5°C(68±9°F)
4. Test equipments are not treated as replacement parts.

ITEM	MEASUREMENT & ADJUSTMENT	REMARKS
Head azimuth adjustment	**A. Record/playback head for incoming message cassette** 1. Playback test tape (QZZCWAT 3 kHz) 2. Adjust screw (A) shown in fig. B for maximum output at SP terminal. (Test equipment connection is shown below.) Fig. A  Test tape Playback mode VTVM Oscilloscope **B. Record/Playback head for outgoing message cassette** 1. Playback test tape (PQJN17Z 3 kHz) 2. Adjust screw (A) shown in fig. B for maximum output at SP terminal. (Test equipment connection is shown in fig. A)	·Record/playback head for incoming message and outgoing message.  Fig. B

Note: Perform the following adjustment after replacing IC5 and VR2.

Test Equipment:
Loop Simulator RC Oscillator VTVM
Preparation:
1. Set the unit's controls as follows: A. SP-PHONE SWITCH—"ON" B. VOLUME CONTROL—"MAX" 2. Connect the AC Adaptor. 3. Set the variable resistor of the loop simulator to maximum resistance (fully counterclockwise). 4. Connect the unit to the loop simulator. 5. Push the Mute button. (S320) 6. Make adjustment in a quiet room.
Reception Level:
1. Set the loop simulator selector switch to "RX" 2. Set RC Oscillator to 1 kHz, –40 dBm with a VTVM. 3. Connect the VTVM to Test Points ▼ (–) - ▼ (+). 4. Adjust VR2 for a reading of –16.5 dBm ±0.5 dBm on the VTVM.

Please refer to the Circuit Board and wiring Connection Diagram which is located at the test points (▼).

Schematic Diagram of Loop Simulator

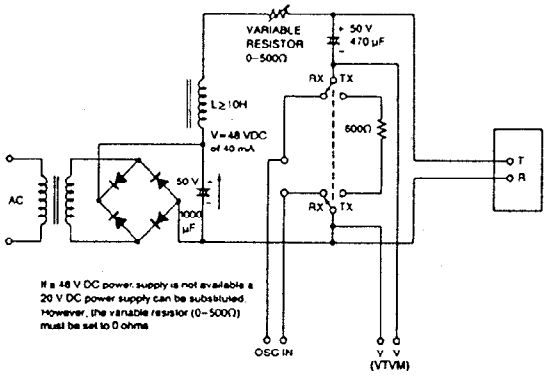
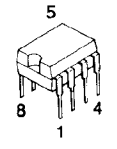
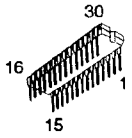

VARIABLE RESISTOR 0–500Ω
+ 50 V 470 µF –
RX TX
L≥10H
V=48 VDC at 40 mA
600Ω
AC
50 V
1000 µF
T
R
RX TX
If a 48 V DC power supply is not available a 20 V DC power supply can be substituted. However, the variable resistor (0–500Ω) must be set to 0 ohms
OSC IN
V V (VTVM)

Fig. 10

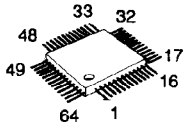
TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES



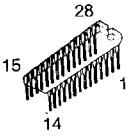
PQVIBA8250 AN6562



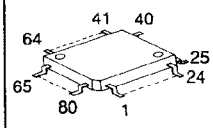
AN6181K



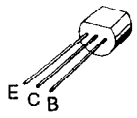
PQVI4678A06H



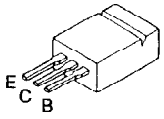
PQVISC79054A



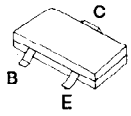
PQVI4608A61F



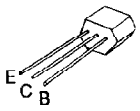
PQVTKSD261CY
2SA1625 2SC2120



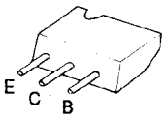
2SD2136



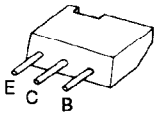
2SD1819A 2SB1218A



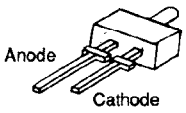
2SC1740S 2SA933



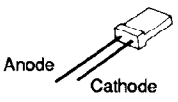
2SD662B



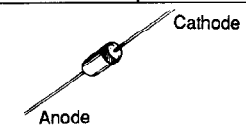
DTC144A
PQVTDTA124E
2SD1994A



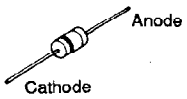
LN221RPH



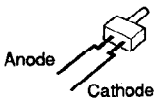
PQVDSLZ155B1
PQVDSLZ255B1



MA165 PQVDS5688G 1SS119 1S2076
PQVD05AZ6R2 PQVDHZ3BLL
PQVDMTZ6R8



MA4300
MA4180 MA4062



PQVDSLZ190B1

EXTENSION CORD CONNECTING METHOD

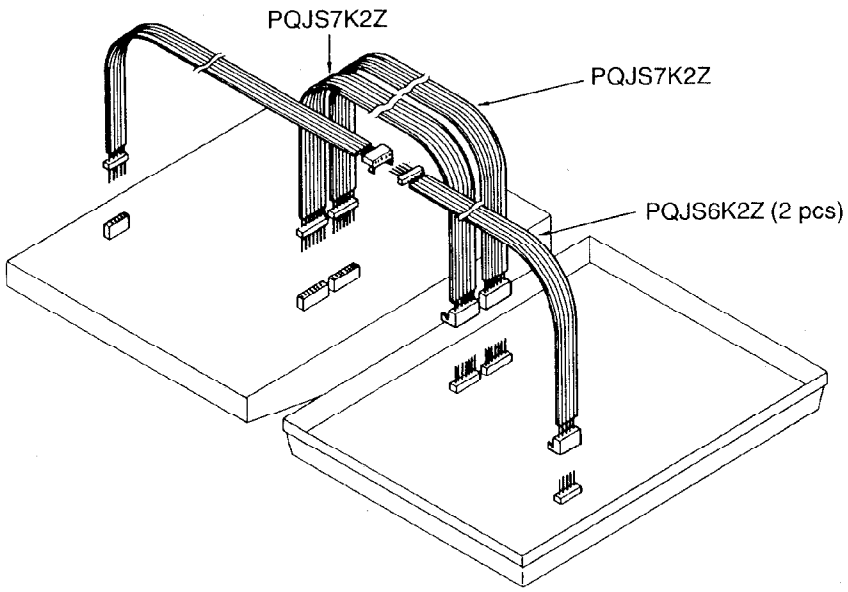


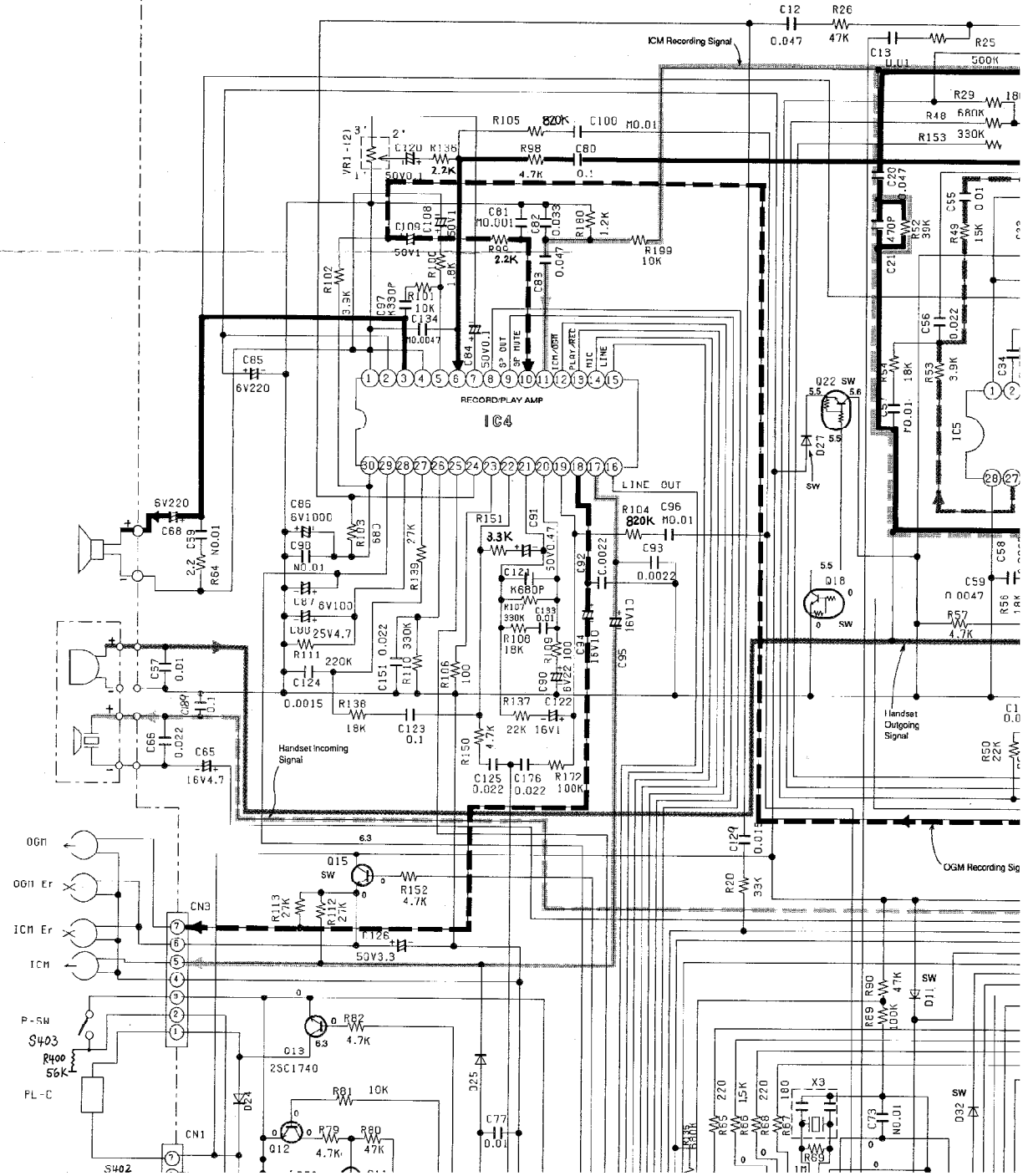
Fig. 11

VOLTAGE OF IC4

Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
1	0	8	0	15	0	22	2.5	22	2.6
2	6	9	5.5	16	0	23	0	23	4.2
3	2.6	10	2.6	17	2.6	24	2.5		
4	0	11	2.6	18	2.6	25	5.5		
5	2.6	12	0	19	2.6	26	0		
6	2.6	13	0	20	2.6	27	2.6		
7	2.6	14	0	21	0	28	0		

VOLTAGE OF IC5

Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
1	2.7	8	0	15	2.7	22	2.7
2	2.7	9	2.7	16	0	23	0.7
3	2	10	5.6	17	0	24	0.6
4	0	11	5.6	18	0	25	0.7
5	1.5	12	2.7	19	8.5	26	0
6	1.5	13	2.7	20	2.6	27	2.7
7	2.7	14	2.7	21	2.7	28	0

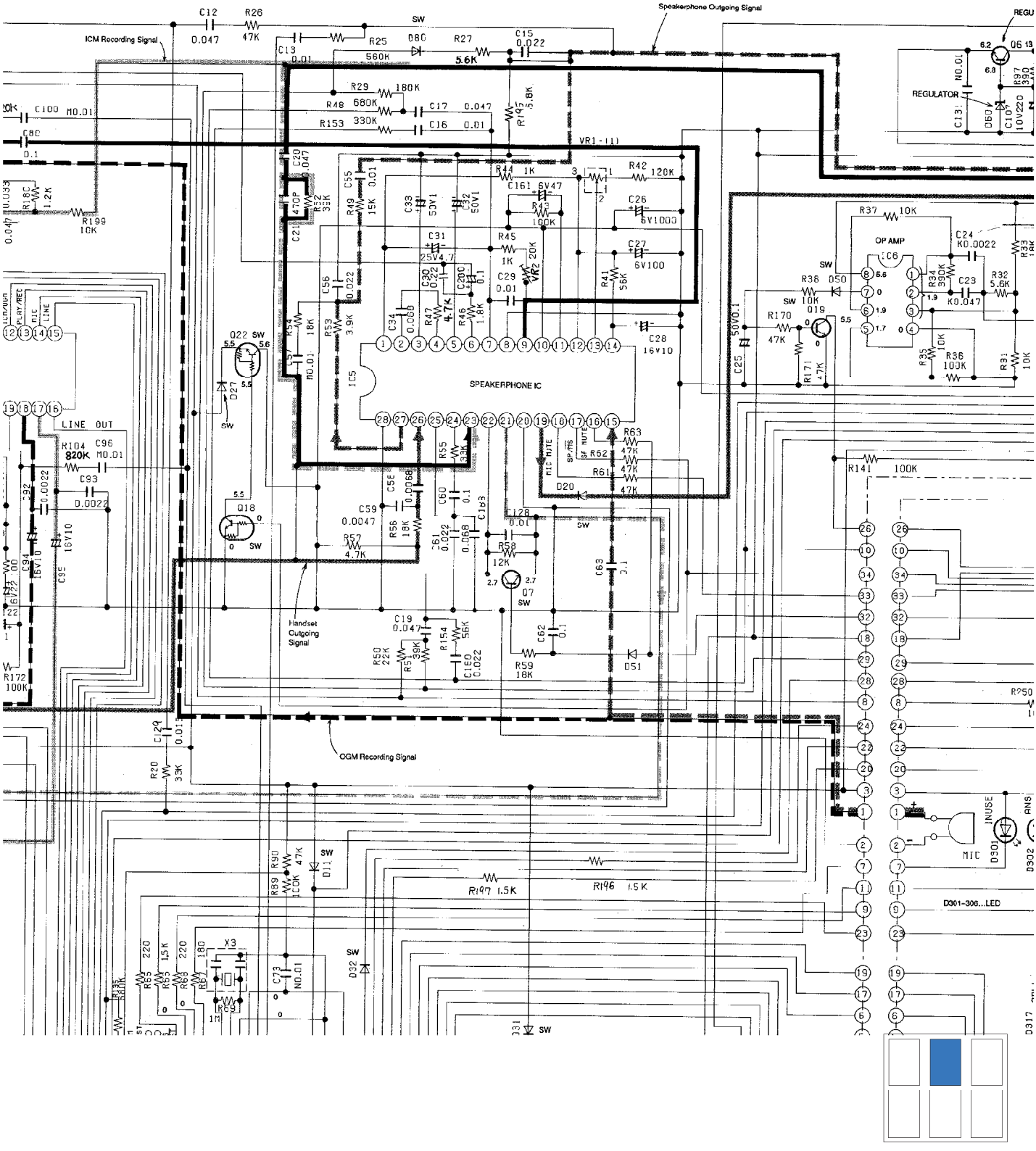


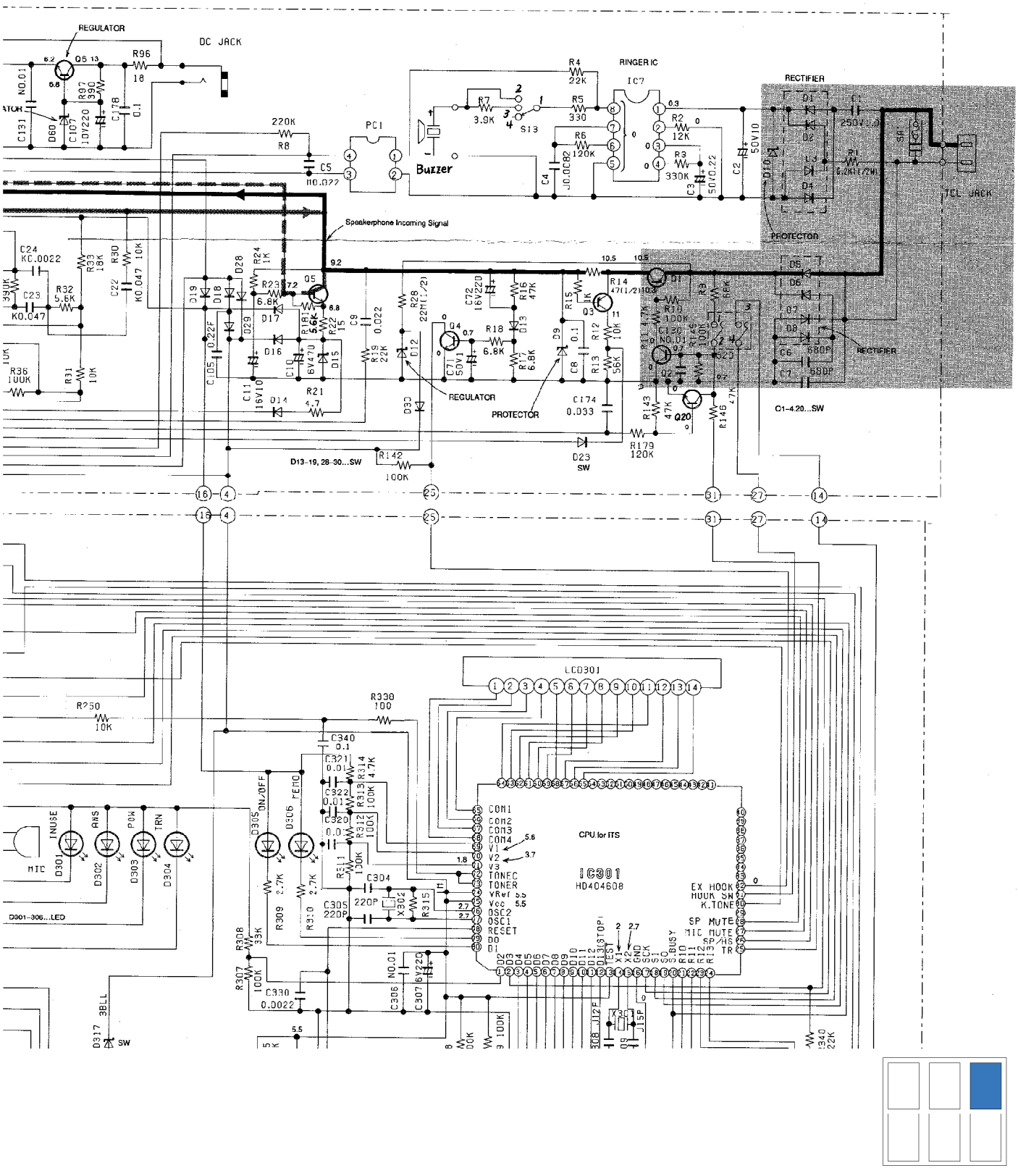
SCHEMATIC DIAGRAM

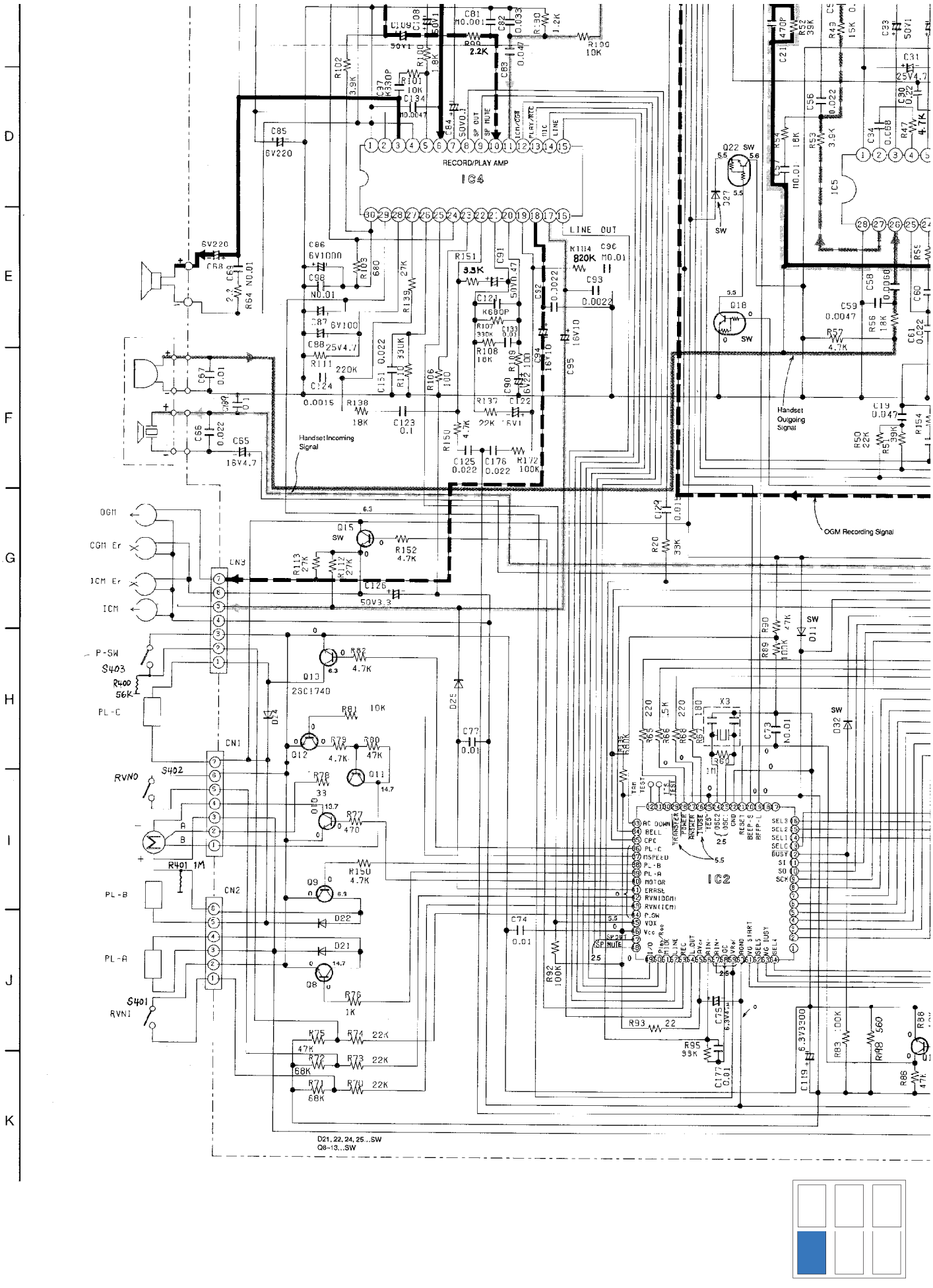
5 6 7 8 9 10

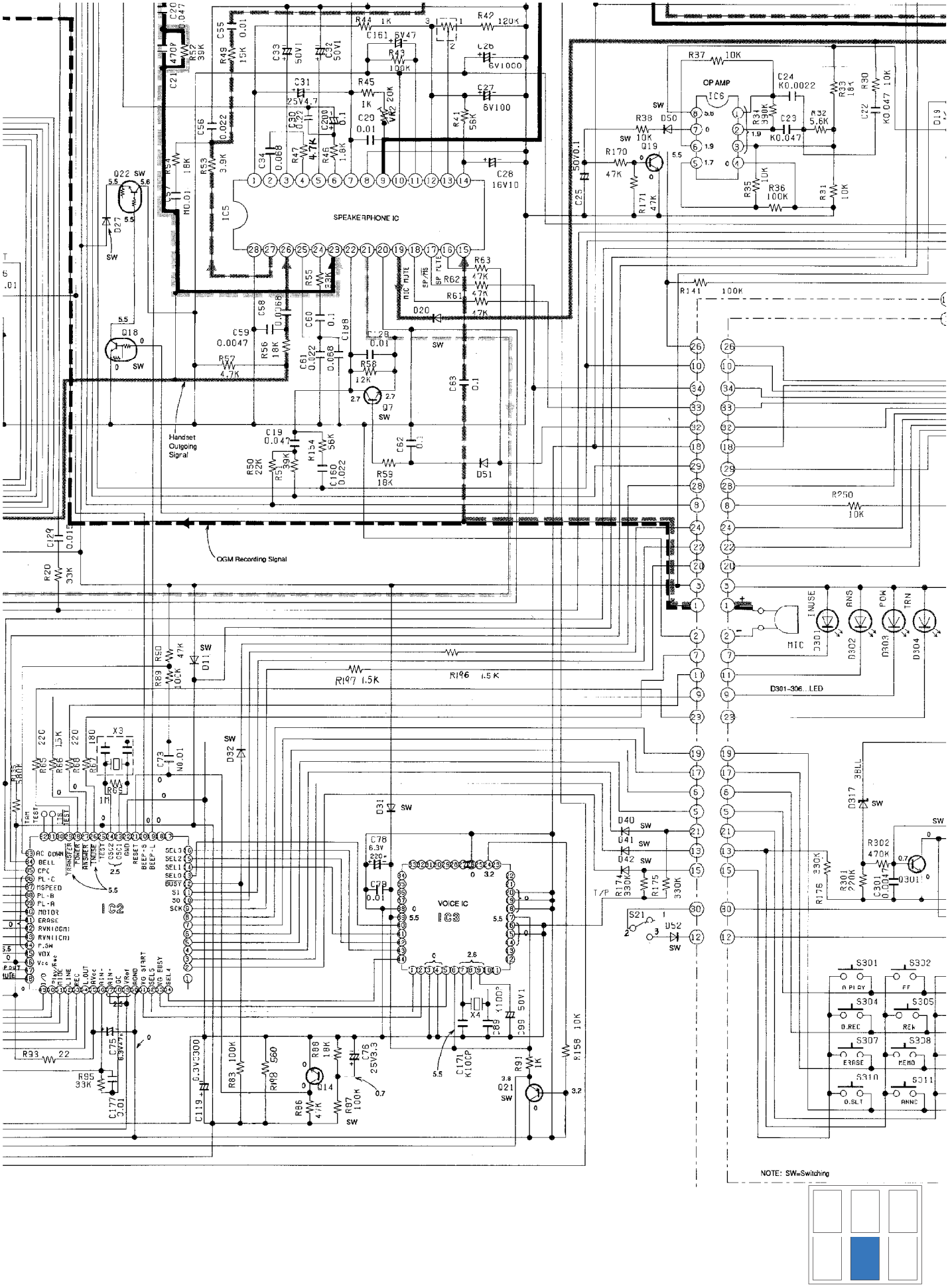
VOLTAGE OF IC5

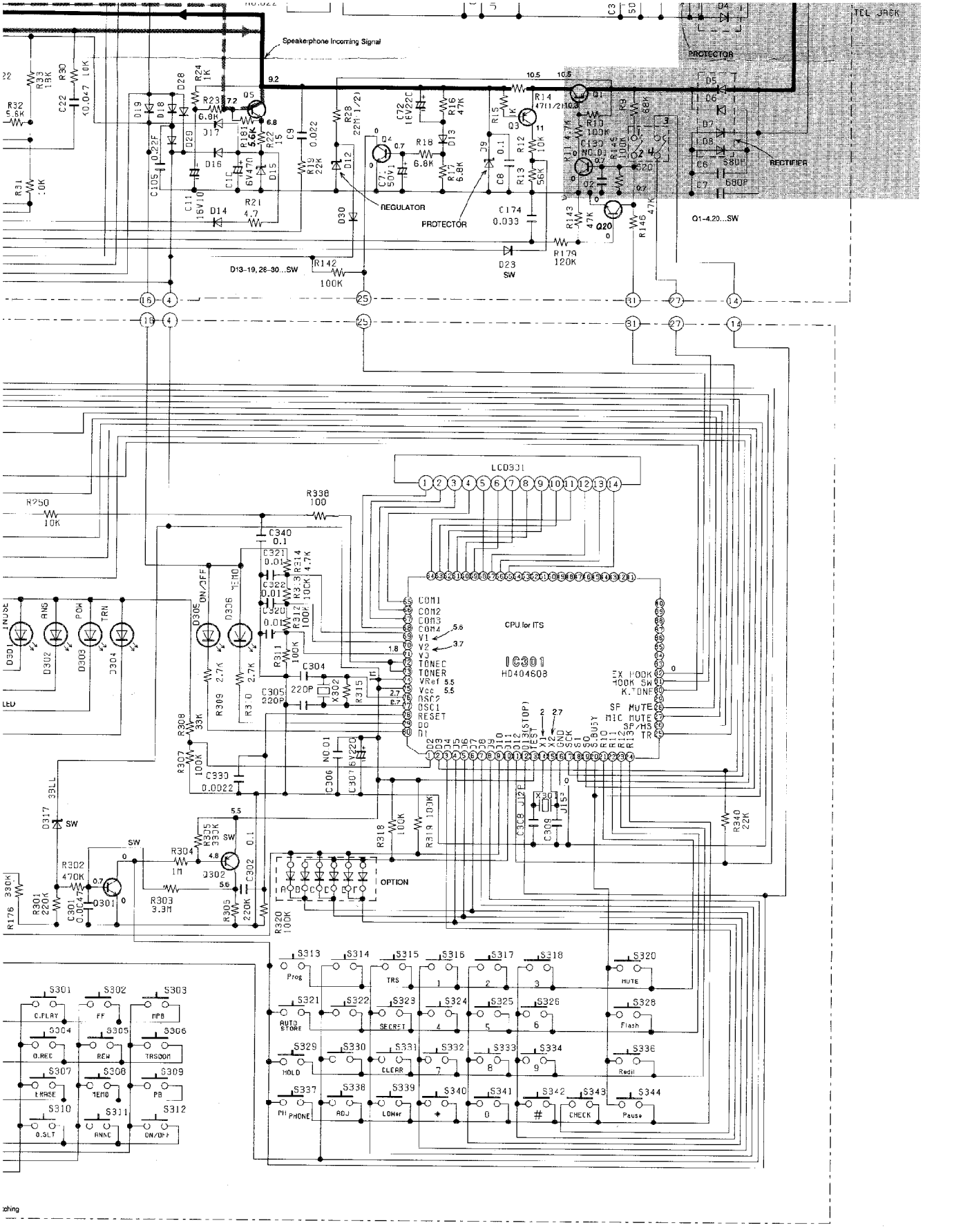
Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
1	2.7	8	0	15	2.7	22	2.7
2	2.7	9	2.7	16	0	23	0.7
3	2	10	5.6	17	0	24	0.6
4	0	11	5.6	18	0	25	0.7
5	1.5	12	2.7	19	8.5	26	0
6	1.5	13	2.7	20	2.6	27	2.7
7	2.7	14	2.7	21	2.7	28	0




11
12
13
14
15
16
REGULATOR
DC JACK
RINGER IC
IC7
RECTIFIER
Buzzer
PC1
S13
Speakerphone Incoming Signal
PROTECTOR
REGULATOR
PROTECTOR
RECTIFIER
D13-19, 28-30...SW
C1-4.20...SW
D23
SW
LCD301
CPU for ITS
IC301
HD404608
MIC
D301-306...LED
D317
SW
EX HOOK
HOOK SW
K.TONE
SP MUTE
MIC MUTE
SP/HS
TR


RECORD/PLAY AMP
IC4
LINE OUT
Handset Incoming Signal
Handset Outgoing Signal
OGM Recording Signal
OGM
CGM Er
ICM Er
ICM
P-SW
S403
R400 56K
PL-C
PL-B
PL-A
RVN0
S402
RVN1
S401
R401 1M
CN1
CN2
CN3
Q13 2SC1740
IC2
D21, 22, 24, 25...SW
Q8-13...SW


SPEAKERPHONE IC
IC5
OP AMP
IC6
VOICE IC
IC3
IC2
Handset Outgoing Signal
OGM Recording Signal
MIC
D301-306 LED
INUSE
ANS
POW
TRN
NOTE: SW=Switching


Speakerphone Incoming Signal
TEL JACK
PROTECTOR
RECTIFIER
REGULATOR
PROTECTOR
Q1-4.20...SW
D13-19,28-30...SW
D23 SW
LCD301
CPU for ITS
IC301
HD404608
COM1
COM2
COM3
COM4
V1
V2
V3
TONEC
TONER
VRef
Vcc
OSC2
OSC1
RESET
DO
DI
EX HOOK
400K SW
K.TONE
SP MUTE
MIC MUTE
SP-HS
TR
OPTION
S301 C.PLAY
S302 FF
S303 MPB
S304 O.REC
S305 REW
S306 TRSOOM
S307 ERASE
S308 MEMO
S309 PB
S310 O.SLT
S311 ANNC
S312 ON/OFF
S313 Prog
S314
S315 TRS
S316 1
S317 2
S318 3
S320 MUTE
S321 AUTO STORE
S322
S323 SECRET
S324 4
S325 5
S326 6
S328 Flash
S329 HOLD
S330
S331 CLEAR
S332 7
S333 8
S334 9
S336 Redil
S337 PH PHONE
S338 ADJ
S339 LOWer
S340 *
S341 0
S342 #
S343 CHECK
S344 Pause

IC BLOCK DIAGRAM

IC4 AN6181K

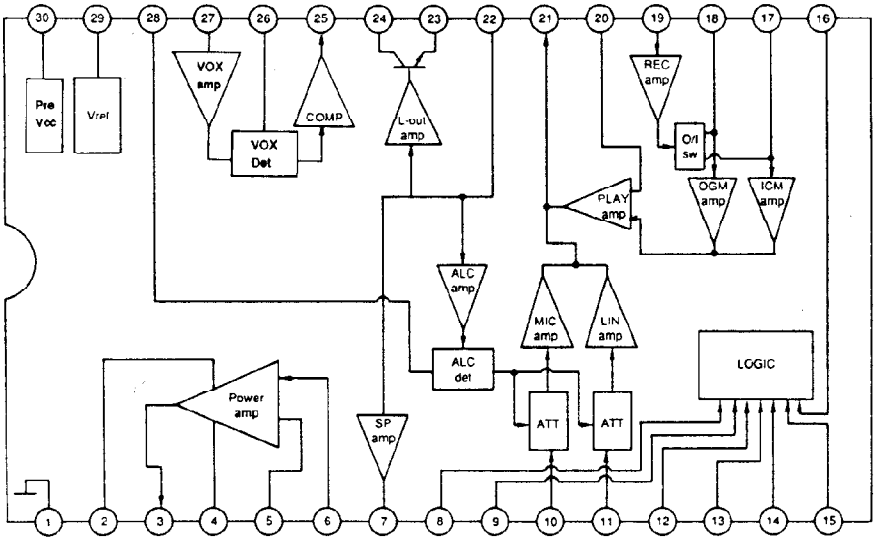


Fig. 11

IC7 PQVIBA8205

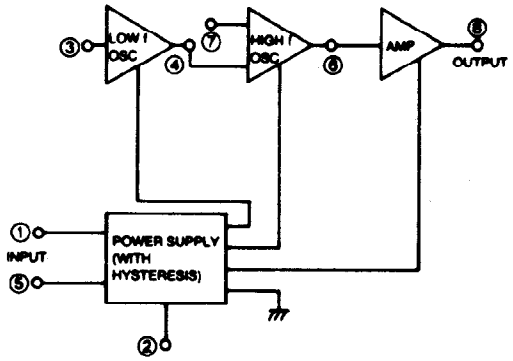


Fig. 12

IC5 PQVISC79054A

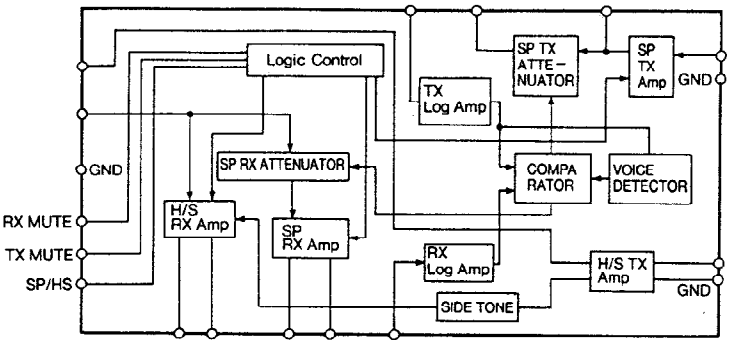


Fig. 13

ACCESSORIES AND PACKING MATERIALS

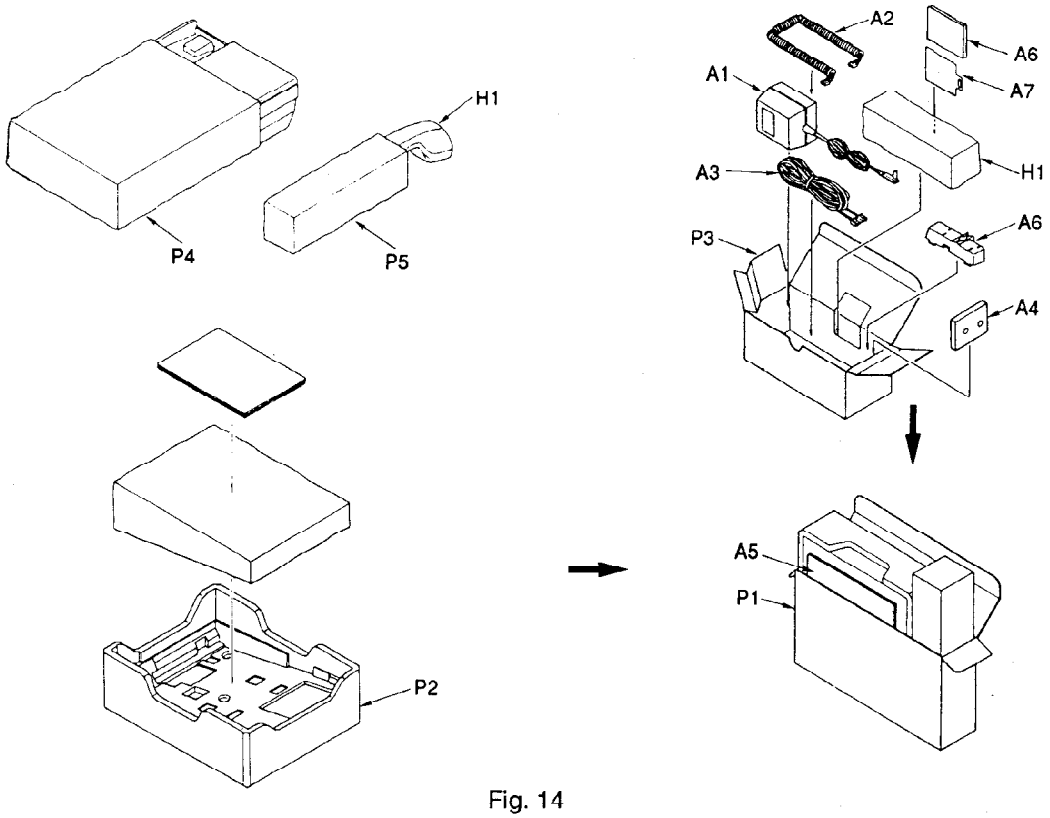


Fig. 14

ACTUAL SIZE OF SCREWS (for DECK)

Ref. No.	Actual size	Part No.	Ref. No.	Actual size	Part No.
Ⓐ		XSN26+W4FS	Ⓕ		XSB2+6FU
Ⓑ		XTN2+10W	Ⓖ		XTW26+8F
Ⓒ		XTN2+6W	Ⓗ		XTW3+S10M
Ⓓ		XTN2+8J	Ⓘ		XTW26+6F
Ⓔ		XSW26+5LF			

MECHANICAL PARTS LOCATION

Ref. No.	Part No.
A	XSN26+W4FS
B	XTN2+10W
C	XTN2+6W
D	XTN2+8J
E	XTW26+5LF
F	XSB2+6FU
G	XTW26+8F
H	XTW3+S10M
I	XTW26+6F

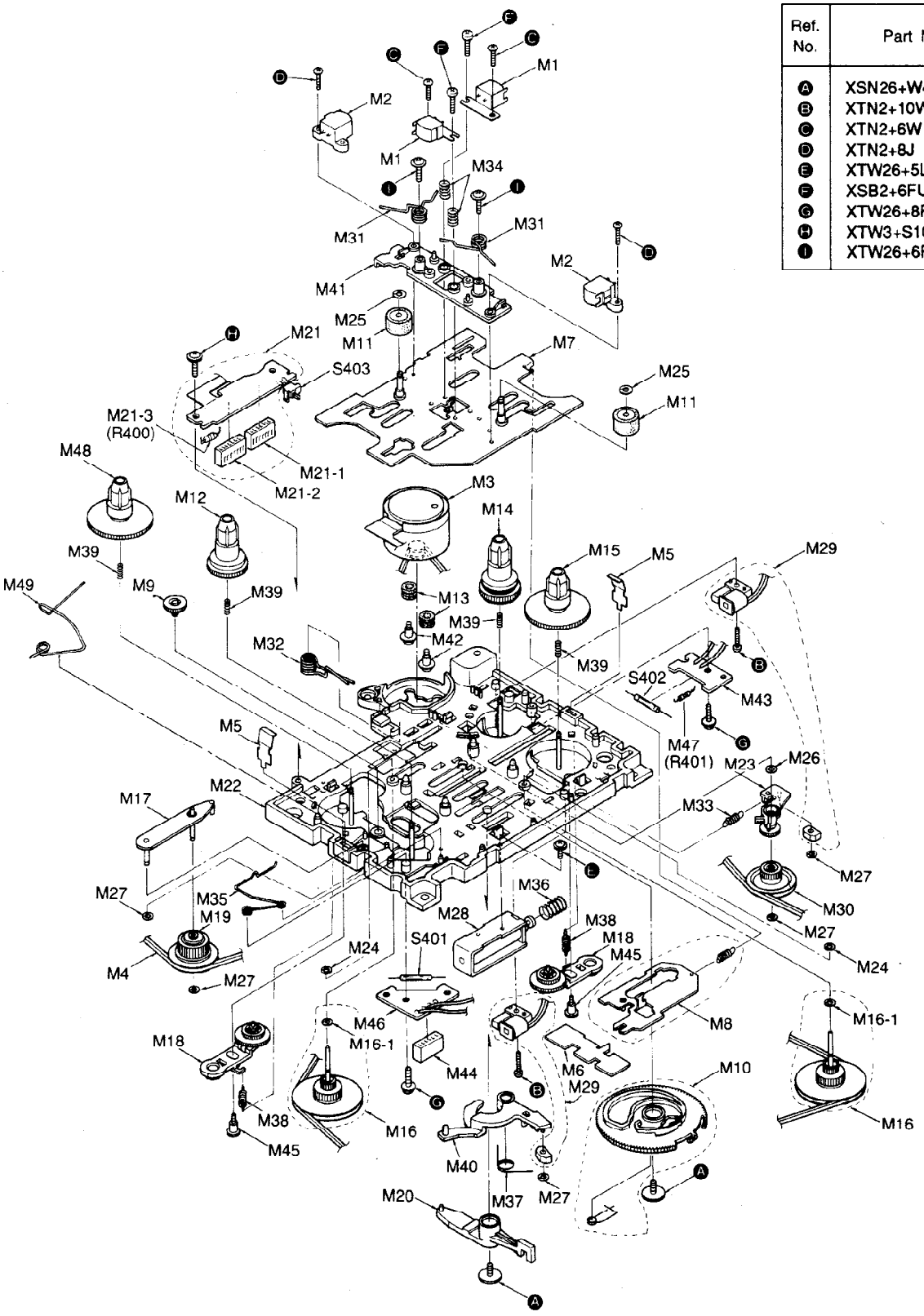


Fig. 15

Specifications

Playback torque	35~60 g•cm
Fast forward torque	85~180 g•cm
Rewind torque	85~180 g•cm

CABINET AND ELECTRICAL PARTS LOCATION

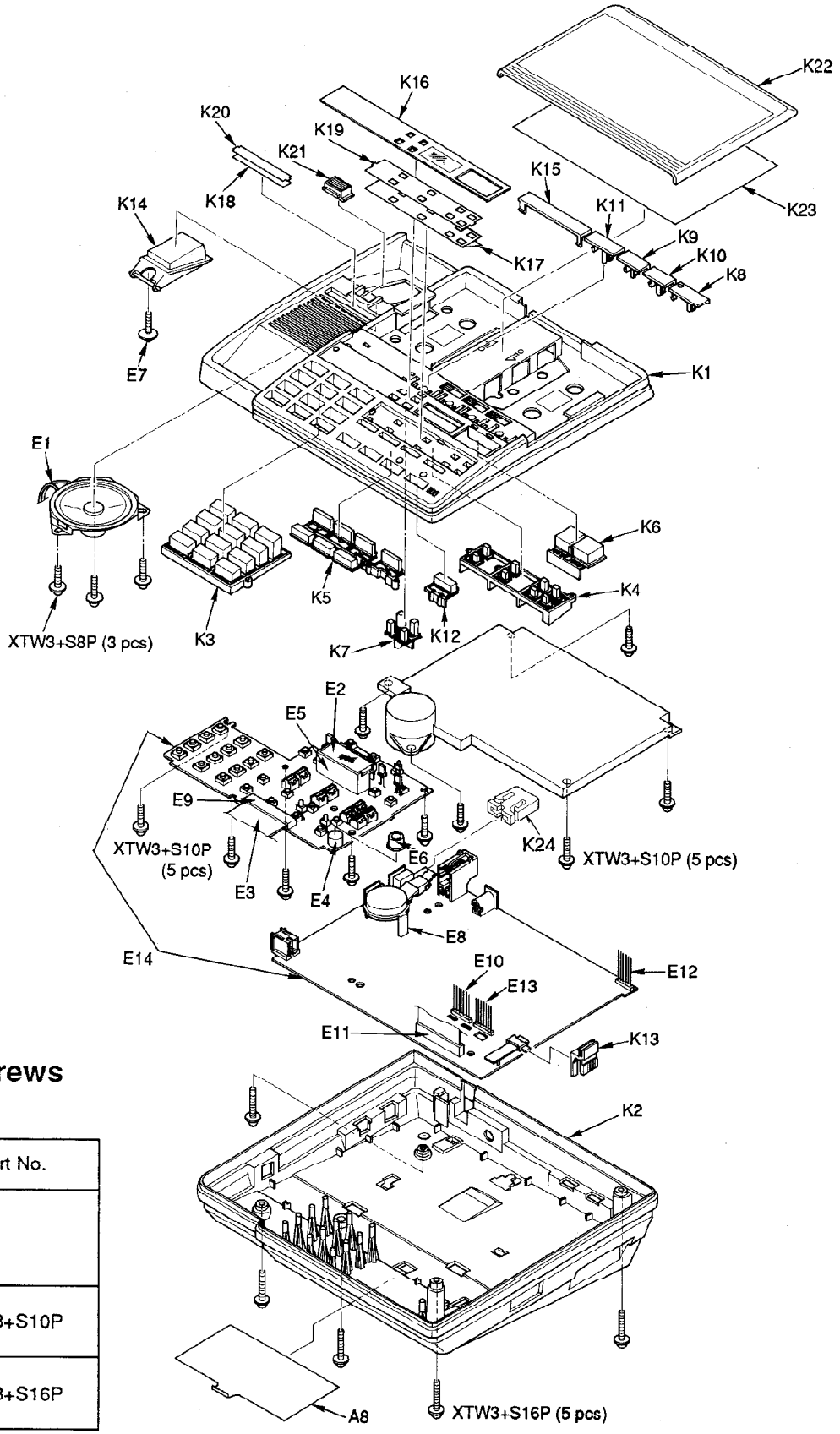


Fig. 15

Actual Size of Screws

●For Unit

Autual Size	Part No.
	E7
	XTW3+S10P
	XTW3+S16P

REPLACEMENT PARTS LIST

Model KX-T2470

Notes:

1. Printed circuit board assembly with mark (NLA) is no longer available after production discontinuation of the complete set.
2. Important safety notice.
   Components identified by the ⚠ mark special characteristics important for safety.
   When replacing any of these components, use only manufacturer's specified parts.
3. The S mark indicates service standard parts and may differ from production parts.
4. RESISTORS & CAPACITORS
   Unless otherwise specified.
   All resistors are in ohms(Ω) k=l000Ω,M=l000kΩ
   All capacitors are in MICRO FARADS(μF) P=μμF
   *Type &Wattage of Resistor
   Type

ERC:Solid	ERX:Metal Film	PQ4R:Carbon
ERD:Carbon	ERG:Metal Oxide	ERS:Fusible Resistor
PQRD:Carbon	ER0:Metal Film	ERF:Cement Resistor

Wattage

10,16:1/8W	14,25:1/4W	12, 50, S1:1/2W	1:1W	2:2W	3:3W

*Type & Voltage of Capacitor
Type

ECFD:Semi-Conductor	ECCD,ECKD,ECBT,PQCBC : Ceramic
ECQS:Styrol	ECQE,ECQV,ECQG : Polyster
PQCUV:Chip	ECEA,ECSZ : Electrolytic
ECQMS:Mica	ECQP : Polypropylene

Voltage

ECQ Type	ECQG ECQV Type	ECSZ Type	Others	
1H: 50V	05: 50V	0F:3.15V	0J :6.3V	1V :35V
2A:100V	1:100V	1A:10V	1A :10V	50,1H:50V
2E:250V	2:200V	1V:35V	1C :16V	1J :63V
2H:500V		0J:6.3V	1E,25:25V	2A :100V

Ref. No.	Part No.	Part Name & Description	Pcs
		MECHANICAL PARTS	
M1	PQJH1E6Z	R/P Head	2
M2	PQJH6E4Z	Erase Head	2
M3	PQFM9914Z	Motor Assembly	1
M4	PQFB18Z	Belt	1
M5	PQFD77Z	Leaf Spring	2
M6	PQFD85Z	Operation Plate	1
M7	PQFD9914Z	Operation Plate	1
M8	PQFD9915Z	Assistant Plate Assembly	1
M9	PQFG55Z	FF Gear	1
M10	PQFG9906Z	Cam Gear Assembly	1
M11	PQFI1007Z	Pinch Roller (ICM)	2
M12	PQFR9915Z	Reel Table (ICM Supply) Assembly	1
M13	PQFI4Z	Rubber Spacer, Motor	2
M14	PQFR9916Z	Reel Table (OGM Supply) Assembly	1
M15	PQFR9917Z	Reel Table (Takeup) Assembly	2
M16	PQFF9910Z	Flywheel Assembly	2
M16-1	PQFN12Z	Washer	3
M17	PQFD9908Y	F/R Lever Assembly	1
M18	PQFR9918Y	Play Arm Assembly	2
M19	PQFQ9904Y	F/R Pulley Assembly	1
M20	PQFY9906Z	Tringer Lever-A Assembly	1
M21	PQFZ9910Z	Flexible P.C. Board Assembly	1
M21-1	PQJS7B30Z	Connector (7 Pin)	1
M21-2	PQJS7B30Z	Connector (7 Pin)	1
M21-3 (R400)	PQRDS2TJ563	Carbon Film Resistor, 56kΩ	1
M22	PQFC9912Z	Mechanism Base Assembly	1
M23	PQFR9919Y	Rewind Arm Assembly	1
M24	PQFN16Z	Washer	2
M25	PQFN51Z	Washer	2
M27	PQFN7Z	Washer	5
M28	PQFP119Z	Plunger-A	1
M29	PQFP121Z	Plunger-B, C S	2
M30	PQFQ32Z	Rew Pully	1
M31	PQFS115Z	Spring, Head	2
M32	PQFS117Z	Spring, Head Base	1
M33	PQFS118Z	Spring, Rew Arm	1
M34	PQFS119Z	Spring	2
M35	PQFS121Z	Spring	1
M36	PQFS86Z	Spring, Plunger-A	1
M37	PQFS87Z	Spring, Tringer Lever-B	1
M38	PQFS88Z	Spring, Play Arm	2
M39	PQFS90Z	Spring	4
M40	PQFW49Z	Tringer Lever-B	1
M41	PQFW52Z	Head Base	1
M42	PQHD4Z	Screw	2
M43	PQUP717Z	P.C. Board, OGM	1
M44	PQJS6B30Z	Connector (6 Pin)	1
M45	PQHD18Z	Screw	2
M46	PQUP568Z	P.C. Board, ICM	1
M47 (R401)	PQRD250TJ105	Carbon Film Resistor, 1MΩ	2
M48	PQFR9920Z	Reel Table (Takeup) Assembly	1
M49	PQFS126Z	Spring	1
		INTEGRATED CIRCTUITS, TRANSISTORS AND DIODES	
IC2	PQVI4678A06H	IC	1
IC3	PQVIT8802B24	IC	1
IC4	AN6181K	IC	1
IC5	PQVISC79054A	IC	1
IC6	AN6562 S	IC	1
IC7	PQVIBA8205	IC	1
IC301	PQVI4608A61F	IC	1
Q1	2SA1625	TRANSISTOR(SI) S	1 ⚠
Q2	2SD662B	TRANSISTOR(SI) S	1 ⚠
Q3, 11, 21	2SA933	TRANSISTOR(SI) S	3
Q4, 7, 9 , 12~15, 19, 20	2SC1740S	TRANSISTOR(SI) S	8
Q5	PQVTKSD261CY	TRANSISTOR(SI)	1
Q6	2SD2136	TRANSISTOR(SI)	1
Q8	2SC2120	TRANSISTOR(SI)	1
Q10	2SD1994A	TRANSISTOR(SI) S	1
Q18	DTC144A	TRANSISTOR(SI) S	1
Q22	PQVTDTA124E	TRANSISTOR(SI)	1
Q301	2SD1819A	TRANSISTOR(SI) S	1
Q302	2SB1218A	TRANSISTOR(SI) S	1
D1~4,11,13, 14, 16~25 ,27~29, 31 , 32, 40,41 , 50~52, 80	1SS119	DIODE(SI) S	28 ⚠
D5~8	PQVDS5688G	DIODE(SI) S	4 ⚠
D9	MA4180	DIODE(SI)	1
D10	MA4300	DIODE(SI) S	1 ⚠
D12	MA4062	DIODE(SI) S	1
D15	PQVD05AZ6R2	DIODE(SI)	1
D30, 42	1S2076	DIODE(SI) S	2
D60	PQVDMTZ6R8	DIODE(SI)	1
D301	PQVDSLZ255B1	LED	1
D302, 304	PQVDSLZ155B1	LED	2
D303	PQVDSLZ190B1	LED	1
D305, 306	LN221RPH	LED	2
D317	PQVDHZ3BLL	DIODE(SI)	1
		JACKS	
JJ1	PQJJ1TA9Z	JACK, HANDSET	1
JJ2	PQJJ1TB18Z	JACK, TELEPHONE	1
JJ3	PQJJ1B4Y	JACK, DC IN	1
		SWITCHES	
S13	PQSS3A17W	SWITCH, RINGER	1
S20	ESE14A211	SWITCH, HOOK	1 ⚠
S21	PQSS2A27W	SWITCH, DIALING MODE SELCTOR	1
S101, 102	PQSE17Y	SWITCH, REED (for DECK)	2
S103	PQSH1A17Z	SWITCH, POSITION (for DECK)	1
S301~313 , 320, 321 , 328, 329	EVQ12405K	SWITCH, OGM PLAY, FF, REW, OGM REC etc	21

Ref. No.	Part No.	Part Name & Description	Pcs
, 336, 337			
, 343, 344			
S314, 315	PQSH1A36Z	SWITCH, DIRECT CALL, TRANSFER,	8
, 322, 323		LOWER, SECRET, TIME ADJUST etc.	
, 330, 331			
, 338, 339			
S316~318	PQSH1A33Z	SWITCH, DIALING	12
, 324~326			
, 332~334			
, 340~342			
		CABINET PARTS	
K1	PQKM187Y8	UPPER CABINET	1
K2	PQYF1047W7	LOWERCABINET ASSEMBLY	1
K3	PQBCX160Z	BUTTON, DIALING 12KEY	1
K4	PQBCX161Z	BUTTON, DIRECT CALL, LOWER	1
K5	PQBCX162Z	BUTTON, REDIAL, MUTE, HOLD etc.	1
K6	PQBCX163Y	BUTTON, NEW MASSEGE, PLAYBACK/PAUSE	1
K7	PQBCX165Z	BUTTON, TIME DAY CHECK, TRANSFER etc.	1
K8	PQBC250Z1	BUTTON, POWER ON/OFF	1
K9	PQBC255Y1	BUTTON, FF	1
K10	PQBC255Z1	BUTTON , REW	1
K11	PQBC256Z1	BUTTON, MEMO/2WAY	1
K12	PQBC257Z1	BUTTON, SPEAKERPHONE	1
K13	PQBD147Z	KNOB, VOLUME	1
K14	PQBE30Y	BUTTON, HOOK	1
K15	PQGG86Y	GRILLE	1
K16	PQGP117Z	PANEL	1
K17	PQHP5052Y	TELEPHONE CARD (LARGE)	1
K18	PQHP532X	TELEPHONE CARD (SMALL)	1
K19	PQHR5280Z	TRANSPARENT PLATE (LARGE)	1
K20	PQHR576Z	TRANSPARENT PLATE (SMALL)	1
K21	PQKE46Y2	HANDSET HANGER	1
K22	PQKG11Z8	CASSETTE LID	1
K23	PQQT5147Z	INDICATION PLATE LABEL	1
K24	PQHR9451Z	PALSTIC PARTS, HOOK SWITCH	1
		ELECTRICAL PARTS	
E1	PQAS65P19Z	SPEAKER	1
E2	PQADB9434A	LIQUID CRYSTAL DISPLAY (LCD301)	1
E3	PQJE104Z	LEAD WIRE	1
E4	PQJM122Z	MICROPHONE	1
E5	PQHR9452Y	SPACER, LCD	1
E6	PQHG550Z	RUBBER PARTS, MICROPHONE	1
E7	PJHE5065Z	SCREW	1
E8	PQWHT2390M	BUZZER ASSEMBLY	1
E9	PQJS34X53Z	CONNECTOR, 34 PIN (CN301)	1
E10	PQJP7D99Z	CONNECTOR, 7 PIN(CN1)	1
E11	PQJS34X54Z	CONNECTOR, 34 PIN (CN101)	1
E12	PQJP6D100Z	CONNECTOR, 6 PIN (CN2)	1
E13	PQJP7D99Z	CONNECTOR, 7 PIN (CN3)	1
E14	PQWPT2470M	PRINTED CIRCUIT BOARD (NLA)	1
		HANDSET PARTS	
H1	PQJX2PS407Z	HANDSET ASSEMBLY	1
H1-1	PQKM121K85	CABINET BODY	1
H1-2	PQKF104Z85	CABINET PLATE	1
H1-3	PQAX4P03Y	SPEAKER	1
H1-4	PQWMJX403Z	MICROPHONE ASSEMBLY	1
H1-5	PQHG695X	RUBBER PARTS	2
H1-6	PQHM67Z	WEIGHT	1
		OTHERS	
VR1	EWAU3A104625	VARIABLE RESISTOR	1
VR2	EVNDXAA03B24	VARIABLE RESISTOR, 20KΩ	1
X3	PQVBT4.0G2	CERAMIC FILTER	1
X4, 302	PQVBB800J1	CERAMIC FILTER	2
X301	PQVCL3276N6Z	CRYSTAL OSCILLATOR	1
SA1	PQVDSAE310F1	VARISTOR(SURGE ABSORBER)	1 ⚠
PC1	PQVIPC817K	PHOTO ELECTRIC TRANSDUCER S	1

Ref No.	Part No.	Value	Ref No.	Part No.	Value
		ACCESSORIES			
A1	KX-A11-W	AC ADAPTOR			1
A2	PQJA59Y	TELEPHONE CORD			1
A3	PQJA30M	HANDSET CORD			1
A4	PQJN1P15AZ	MAGNETIC RECORDING TAPE			1
A5	PQKL34Z7	STAND			1
A6	PQQX6194Z	INSTRUCTION BOOK			1
A7	PQQX9670Z	DIAL CARD			1
A8	PQHP5083Z	MEMORY CARD			1
		PACKING MATERIALS			
P1	PQPK1118Z	GIFT BOX			1
P2	PQPN1141Z	CUSHION			1
P3	PQPN1142Z	ACCESSORY BOX			1
P4	XZB34X40A01	PROTECTION COVER (for SET)			1
P5	PQPH75Z	PROTECTION COVER (for HANDSET)			1
Ref No.	Part No.	Value	Ref No.	Part No.	Value
		RESISTORS			
R1	ERDS1TJ622	6.2K ⚠	R54	PQ4R18XJ183	18K
R2	ERDS2TJ123	12K	R55	ERDS2TJ333	33K
R3	PQ4R18XJ334	330K	R56	ERDS2TJ183	18K
R4	PQ4R18XJ223	22K	R57	ERD25TJ472	4.7K
R5	PQ4R18XJ331	330	R58	ERDS2TJ123	12K
R6	PQ4R18XJ124	120K	R59	ERDS2TJ183	18K
R7	PQ4R18XJ392	3.9K	R60	Not Used	
R8	PQ4R18XJ224	220K	R61	ERDS2TJ473	47K
R9	PQ4R18XJ683	68K ⚠	R62	ERDS2TJ473	47K
R10	ERDS2TJ104	100K ⚠	R63	ERDS2TJ473	47K
R11	ERDS2TJ472	4.7K ⚠	R64	PQ4R18XJ2R2	2.2
R12	ERDS2TJ103	10K	R65	PQ4R18XJ221	220
R13	ERDS2TJ563	56K	R66	ERD25TJ152	1.5K
R14	ERDS1TJ470	47	R67	ERD25TJ181	180
R15	PQ4R18XJ102	1K	R68	ERD25TJ221	220
R16	PQ4R18XJ473	47K	R69	PQ4R18XJ105	1M
R17	PQ4R18XJ682	6.8K	R70	ERDS2TJ223	22K
R18	PQ4R18XJ682	6.8K	R71	PQ4R18XJ683	68K
R19	ERDS2TJ223	22K	R72	PQ4R18XJ683	68K
R20	ERDS2TJ333	33K	R73	ERDS2TJ223	22K
R21	PQ4R18XJ4R7	4.7	R74	ERDS2TJ223	22K
R22	ERDS2TJ150	15	R75	PQ4R10XJ473	47K
R23	ERDS2TJ682	6.8K	R76	ERDS2TJ102	1K
R24	PQ4R18XJ102	1K	R77	PQ4R18XJ471	470
R25	ERDS2TJ564	560K	R78	PQ4R18XJ330	33
R26	ERDS2TJ473	47K	R79	PQ4R18XJ472	4.7K
R27	ERDS2TJ562	5.6K	R80	ERDS2TJ473	47K
R28	ERC14GM226	22M	R81	PQ4R18XJ103	10K
R29	PQ4R18XJ184	180K	R82	PQ4R18XJ472	4.7K
R30	PQ4R18XJ103	10K	R83	ERDS2TJ104	100K
R31	PQ4R18XJ103	10K	R84	Not Used	
R32	PQ4R18XJ562	5.6K	R85	Not Used	
R33	ERDS2TJ183	18K	R86	PQ4R18XJ473	47K
R34	PQ4R18XJ394	390K	R87	PQ4R18XJ104	100K
R35	ERDS2TJ103	10K	R88	PQ4R18XJ183	18K
R36	ERDS2TJ104	100K	R89	PQ4R18XJ104	100K
R37	PQ4R18XJ103	10K	R90	ERD25TJ473	47K
R38	PQ4R18XJ103	10K	R91	ERDS2TJ102	1K
R39	Not Used		R92	ERDS2TJ104	100K
R40	Not Used		R93	ERD25TJ220	22
R41	PQ4R18XJ563	56K	R94	Not Used	
R42	PQ4R18XJ124	120K	R95	ERDS2TJ333	33K
R43	PQ4R18XJ104	100K	R96	PQRQM2VJ180	18
R44	PQ4R18XJ102	1K	R97	ERDS1TJ391	390
R45	ERDS2TJ102	1K	R98	PQ4R18XJ472	4.7K
R46	ERDS2TJ182	1.8K	R99	PQ4R1XJ222	2.2K
R47	PQ4R18XJ472	4.7K	R100	ERDS2TJ182	1.8K
R48	ERDS2TJ684	680K	R101	ERDS2TJ103	10K
R49	PQ4R18XJ153	15K	R102	PQ4R18XJ392	3.9K
R50	ERDS2TJ223	22K	R103	PQ4R18XJ681	680
R51	PQ4R18XJ393	39K	R104	PQ4R18XJ824	820K
R52	ERDS2TJ393	39K	R105	PQ4R18XJ824	820K
R53	PQ4R18XJ392	3.9K	R106	ERDS2TJ101	100

Ref No.	Part No.	Value	Ref No.	Part No.	Value
R107	PQ4R18XJ334	330K	R176	PQ4R18XJ334	330K
R108	ERDS2TJ183	18K	R177	Not Used	
R109	ERDS2TJ101	100	R178	Not Used	
R110	PQ4R18XJ334	330K	R179	PQ4R18XJ124	120K
R111	PQ4R18XJ224	220K	R180	PQ4R18XJ122	1.2K
R112	PQ4R18XJ273	27K	R181	ERDS2TJ562	5.6K
R113	ERDS2TJ273	27K			
			R195	ERDS2TJ682	6.8K
			R196	PQ4R10XJ152	1.5K
R135	PQ4R18XJ684	680K	R197	PQ4R10XJ152	1.5K
R136	PQ4R18XJ222	2.2K	R198	PQ4R10XJ561	560
R137	ERDS2TJ223	22K	R199	PQ4R18XJ103	10K
R138	PQ4R18XJ183	18K			
R139	ERDS2TJ273	27K	R250	PQ4R18XJ103	10K
R140	Not Used				
R141	ERD25TJ104	100K	R301	PQ4R18XJ224	220K
R142	ERDS2TJ104	100K	R302	PQ4R18XJ474	470K
R143	ERDS2TJ473	47K	R303	ERDS2TJ335	3.3M
R144	Not Used		R304	PQ4R18XJ105	1M
R145	PQ4R18XJ104	100K ⚠	R305	PQ4R18XJ334	330K
R146	ERDS2TJ473	47K	R306	PQ4R18XJ224	220K
R150	ERDS2TJ472	4.7K	R307	PQ4R18XJ104	100K
R151	ERDS2TJ332	3.3K	R308	PQ4R18XJ333	33K
R152	PQ4R18XJ472	4.7K	R309	PQ4R18XJ272	2.7K
R153	PQ4R18XJ334	330K	R310	PQ4R18XJ272	2.7K
R154	ERDS2TJ563	56K	R311	PQ4R18XJ104	100K
R155	Not Used		R312	PQ4R18XJ104	100K
R156	Not Used		R313	PQ4R18XJ104	100K
R157	Not Used		R314	PQ4R18XJ472	4.7K
R158	ERDS2TJ103	10K	R315	PQ4R18XJ105	1M
			R316	Not Used	
R170	ERDS2TJ473	47K	R317	Not Used	
R171	ERDS2TJ473	47K	R318	PQ4R18XJ104	100K
R172	ERDS2TJ104	100K	R319	PQ4R18XJ104	100K
R173	Not Used		R320	PQ4R18XJ104	100K
R174	PQ4R18XJ334	330K	R338	PQ4R10XJ101	100
R175	PQ4R18XJ334	330K	R339	Not Used	
			R340	PQ4R10XJ223	22K

CAPACITORS

C1	ECQE2E105KZ	1 ⚠	C33	ECEA1HKS010	1
C2	ECEA1HU100	10	C34	ECFD1C683KD	0.068
C3	ECEA1HUR22	0.22	C35	Not Used	
C4	ECQM1H822JV	0.0082	C36	Not Used	
C5	ECFD1E223KD	0.022	C37	Not Used	
C6	ECKD2H681KB	680P ⚠	C38	Not Used	
C7	ECKD2H681KB	680P ⚠	C39	Not Used	
C8	ECUV1H473MD	0.047	C40	Not Used	
C9	ECFD1E223KD	0.022	C41	Not Used	
C10	ECEA0JU471	470	C42	Not Used	
C11	ECEA1HU100	10	C43	Not Used	
C12	ECFD1E473KD	0.047	C44	Not Used	
C13	PQCBC1C103MY	0.01	C45	Not Used	
C14	Not Used		C46	Not Used	
C15	PQCBC0J223MY	0.022	C47	Not Used	
C16	PQCBC1C103MY	0.01	C48	Not Used	
C17	ECFD1E223KD	0.022	C49	Not Used	
C18	Not Used		C50	Not Used	
C19	ECFD1E473KD	0.047	C51	Not Used	
C20	ECFD1E473KD	0.047	C52	Not Used	
C21	PQCBC1H471KB	470P	C53	Not Used	
C22	ECFD1E473KD	0.047	C54	Not Used	
C23	ECFD1E473KD	0.047	C55	PQCBC1C103MY	0.01
C24	ECKD1H222KB	0.0022	C56	ECFD1E223KD	0.022
C25	ECEA1HKS0R1	0.1	C57	PQCBC1C103MY	0.01
C26	ECEA0JU102	1000	C58	PQCBC1C682KX	0.0068
C27	ECEA1CK101	100	C59	PQCBC1C472MX	0.0047
C28	ECEA1CKS100	10	C60	ECFD1C104KD	0.1
C29	PQCBC1C103MY	0.01	C61	ECUV1H223MD	0.022
C30	ECUV1H224ZF	0.22	C62	ECFD1C104KD	0.1
C31	ECEA1EU4R7	4.7	C63	ECFD1C104KD	0.1
C32	ECEA1HKS010	1	C64	Not Used	

Ref No.	Part No.	Value	Ref No.	Part No.	Value
C65	ECEA1HKS4R7	4.7	C119	ECEA0JU332	3300
C66	PQCBC0J223MY	0.022	C120	ECEA1HKS0R1	0.1
C67	PQCBC1C103MY	0.01	C121	PQCBC1H681KB	680P
C68	ECEA0JK221	220	C122	ECEA1HKS010	1
C69	PQCBC1C103MY	0.01	C123	ECUV1H104MD	0.1
C70	Not Used		C124	PQCBC1C152MX	0.0015
C71	ECEA1HKS010	1	C125	ECUV1H223MD	0.022
C72	ECEA1CU221	220	C126	ECEA1HKS3R3	3.3
C73	PQCBC1C103MY	0.01	C127	Not Used	
C74	PQCBC1C103MY	0.01	C128	PQCBC1C103MY	0.01
C75	ECEA1EU470	47	C129	ECFD1E153KD	0.015
C76	ECEA1HKS3R3	3.3	C130	PQCBC1C103MY	0.01 ⚠
C77	PQCBC1C103MY	0.01	C131	PQCBC1C103MY	0.01
C78	ECEA0JK221	220	C132	Not Used	
C79	PQCBC1C103MY	0.01	C133	PQCBC1C103MY	0.01
C80	ECUV1H104MD	0.1	C134	PQCBC1C472MX	0.0047
C81	PQCBC1H102KB	0.001			
C82	ECUV1H333JC	0.033	C151	ECFD1E223KD	0.022
C83	ECUV1H473MD	0.047			
C84	ECEA1HKS0R1	0.1	C160	PQCBC0J223MY	0.022
C85	ECEA0JK221	220	C161	ECEA1EU470	47
C86	ECEA0JU102	1000			
C87	ECEA1CK101	100	C171	PQCBC1H101KB	100P
C88	ECEA1EU4R7	4.7	C172	Not Used	
C89	PQCBC1H101KB	100P	C173	Not Used	
C90	ECEA0JU220	22	C174	ECFD1C333KD	0.033
C91	ECEA1HUR47	0.47	C175	Not Used	
C92	ECUV1H222J	0.0022	C176	ECUV1H223MD	0.022
C93	ECUV1H222J	0.0022	C177	PQCBC1C103MY	0.01
C94	ECEA1CKS100	10	C178	ECFD1C104KD	0.1
C95	ECEA1CKS100	10			
C96	PQCBC1C103MY	0.01	C188	PQCUV1C683MD	0.068
C97	PQCBC1H331KB	330P	C189	PQCUV1E104ZF	0.1
C98	PQCBC1C103MY	0.01			
C99	ECEA1HKS010	1	C200	ECEA1HKS0R1	0.1
C100	PQCBC1C103MY	0.01			
C101	Not Used		C301	ECUV1H472KB	0.0047
C102	Not Used		C302	ECUV1H104MD	0.1
C103	Not Used		C303	Not Used	
C104	Not Used		C304	PQCBC1H221KB	220P
C105	EECF5R5H224	0.22	C305	PQCBC1H221KB	220P
C106	Not Used		C306	PQCBC1C103MY	0.01
C107	ECEA0JK221	220	C307	ECEA0JK221	220
C108	ECEA1HKS010	1	C308	ECUV1H120JC	12P
C109	ECEA1HKS0R1	0.1	C309	ECUV1H150JC	15P
			C320	ECUV1H103KB	0.01
			C321	ECUV1H103KB	0.01
			C322	ECUV1H103KB	0.01
			C330	PQCUV1H222KB	0.0022
			C340	PQCUV1E104ZF	0.1